Estimated Benefits to Primary Limiting Factors (PLFs) from Habitat Actions by Population and Watershed

Future improvements to limiting factors are estimates from the best professional judgement of tribal biologists, assuming the implementation of all tribal habitat actions in the MOA. Limiting factors are weighted as to their relative importance in order to calculate watershed improvements.

ESU: Middle Columbia River Steelhead

Watershed - Hydrology

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function of PLFs	Future F Estimate 10-Years	Estimate 25-Years			tershed
	All Yakima St	eelhead (M	ainstem	Effects)			
Lower Yakima River	Ecologic – Community	80	85	90	73.8	81.4	86.2
	In-channel Characteristics	70	75	80			
	Passage / Entrainment	100	100	100			
	Pools	90	91	92			
	Riparian / Floodplain	70	75	80			
	Sediment	70	75	80			
	Side Channel Reconnection	80	82	85			
	Water Quality – Chemistry	80	90	92			
	Water Quality - Temperature	70	80	85			
	Water Quality - Toxics	80	90	92			
	Water Quantity - Flow	50	70	80			

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function of PLFs	Future F Estimate		Estimated Current Watershed Function		tershed Estimate
I	Deschutes River Easts	ide Tribut	aries Sun	nmer Ste	elhead		
Buck Hollow Creek	In-channel Characteristics	60	60	60	61.2	61.2	61.2
	Water Quality - Temperature	65	65	65			
	Water Quantity – Flow	60	60	60			
Deschutes River (Mainstem Effects)	Riparian / Floodplain	75	85	90	76.5	85.8	90
	Sediment	85	90	90			
Trout Creek	In-channel Characteristics	35	35	35	33.5	33.5	33.5
	Riparian / Floodplain	25	25	25		I	
	Water Quantity – Flow	40	40	40			

Watershed	Primary Limiting	Estimated Current	Esti Future F	mated Tunction	Estimated Current	Est. Futu	re Funct. tershed
	Factors (PLFs)	Function of PLFs	Estimate	Estimate	Watershed Function	Estimate	Y
D	eschutes River West	side Tribut	aries Sui	mmer Sto	eelhead		
Badger/Boulder/Eagle/Nena/Skookum	In-channel Characteristics	40	65	85	47.2	69.8	81.5
	Passage / Entrainment	90	95	100			
	Riparian / Floodplain	35	70	80			
	Watershed - Hydrology	65	70	80			
Beaver Creek	In-channel Characteristics	40	60	75	46.6	63	84.2
	Sediment	55	70	85			JI.
	Water Quality – Chemistry	50	60	95			
	Water Quality - Temperature	30	50	85			
	Water Quality - Toxics	50	65	95			
Oak Creek	Passage / Entrainment	0	100	100	30	92.5	96.2
	Riparian / Floodplain	40	90	95		II.	JI.
Shitike Creek	In-channel Characteristics	40	80	85	45	77.4	83.6
	Riparian / Floodplain	35	55	60			JL
	Water Quality – Chemistry	70	80	85			
	Water Quality - Temperature	60	70	80			
Warm Springs River	In-channel Characteristics	85	90	95	84.5	90	94.5
	Riparian / Floodplain	80	90	90		1	JI.

		Estimated			Estimated	Est. Futu	re Funct.
Watershed	Primary Limiting	Current			Future Function		Current
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years

Hood River Summer Steelhead

West Fork Hood River	In-channel Characteristics	75	80	85	75	80	85

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function of PLFs	Future F Estimate				tershed Estimate
	Hood R	iver Winter	Steelhea	ıd			
East Fork Hood River	In-channel Characteristics	70	80	85	70	80.8	85.8
	Riparian / Floodplain	70	85	90		l .	
Middle Fork Hood River	In-channel Characteristics	70	80	90	70	80	90
Middle Fork Hood River (Clear Branch)	Passage / Entrainment	15	80	90	15	80	90
Middle Fork Hood River (Eliot Branch)	Passage / Entrainment	10	85	95	10	85	95

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function	Estin Future F Estimate		Estimated Current Watershed	Est. Futur for Wa	tershed
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years
	Klicki	tat River S	teelhead				
Klickitat Canyon	Ecologic – Community	80	80	80	78.8	78.8	78.8
	Sediment	90	90	90			
	Watershed - Hydrology	75	75	75			
Lower Klickitat River	Ecologic – Community	30	30	30	51	52.5	52.5
	In-channel Characteristics	40	40	40		1	
	Passage / Entrainment	90	90	90			
	Pools	60	60	60			
	Riparian / Floodplain	30	35	35			
	Sediment	90	90	90			
	Side Channel Reconnection	20	30	30			
	Water Quality - Temperature	80	80	80			
	Water Quantity – Flow	90	90	90			
	Watershed - Hydrology	90	90	90			
Lower Little Klickitat River	Ecologic – Community	80	80	80	61.5	62	63.5
	In-channel Characteristics	60	60	60			J.
	Pools	80	80	80			
	Riparian / Floodplain	60	60	65			
	Sediment	70	75	80			
	Water Quality - Temperature	70	70	70			
	Water Quantity - Flow	50	50	50			
	Watershed - Hydrology	60	60	65			
Middle Klickitat River	Ecologic – Community	30	50	60	62.4	73.2	80.3
	In-channel Characteristics	60	70	80			J.
	Passage / Entrainment	95	95	95			
	Pools	70	80	85			
	Riparian / Floodplain	60	70	80			
	Sediment	90	90	90			
	Side Channel Reconnection	70	85	90			
	Water Quality - Temperature	90	90	90			
	Watershed - Hydrology	80	82	85			
Swale Creek	Ecologic – Community	40	45	50	39.2	47.6	53
	In-channel Characteristics	20	30	40			
	Pools	10	30	40			
	Sediment	80	85	90			
	Water Quality - Temperature	70	70	70			
	Water Quantity – Flow	60	60	60			
	Watershed - Hydrology	90	90	90			
Trout Creek	In-channel Characteristics	60	70	80	55.5	60.2	65.8

Watershed	Primary Limiting	Estimated Current	Future Function		Estimated Current	Est. Future Funct. for Watershed		
	Factors (PLFs)	Function	Estimate		Watershed		+	
Trout Creek	, , ,	of PLFs		25-Years			25-Years	
Trout Creek	Passage / Entrainment	80	80	80	55.5	60.2	65.8	
	Pools	70	75	75		1	JL	
	Riparian / Floodplain	50	55	65				
	Sediment	50	55	60				
	Watershed - Hydrology	50	50	50				
Upper Klickitat River	Ecologic – Community	30	50	60	56.8	66.2	72.8	
	In-channel Characteristics	50	60	65			1	
	Passage / Entrainment	90	90	90				
	Pools	70	80	85				
	Riparian / Floodplain	50	60	70				
	Sediment	60	65	70				
	Side Channel Reconnection	60	70	80				
	Water Quality - Temperature	80	80	80				
	Watershed - Hydrology	60	65	70				
Unner Little Klickitat River	Ecologic – Community	60	60	60	47.4	47.8	48.5	
opper Entire Rineman River	In-channel Characteristics	50	50	50	47.4	47.0	40.5	
	Passage / Entrainment	85	85	85				
	Pools	70	70	70				
	Riparian / Floodplain	30	30	30				
	Sediment	65	65	65				
	Side Channel Reconnection	0	0	0				
	Water Quality – Chemistry	70	70	70				
	Water Quality - Temperature	40	40	40				
	Water Quantity – Flow	50	50	50				
	Watershed - Hydrology	50	55	65				
							n	
Upper Middle Klickitat River	Ecologic – Community	70	70	70	75.8	76.4	77	
	In-channel Characteristics	85	85	85				
	Pools	85	85	85				
	Riparian / Floodplain	75	75	75				
	Sediment	90	92	94				
	Watershed - Hydrology	70	75	80				
West Fork Klickitat River	Sediment	90	92	95	90	92	95	
White Creek	Ecologic – Community	80	85	85	45	52.2	59.2	
	In-channel Characteristics	40	50	60		1	JI	
	Passage / Entrainment	60	80	90	-			
	Pools	35	35	35	1			
	Riparian / Floodplain	30	40	55	1			
	Sediment	50	55	70	1			
	Water Quality - Temperature	60	65	65	1			
			1	1	1			

Watershed	Primary Limiting	Estimated Current	Estin Future F	mated unction	Estimated Current	Est. Future Functor for Watershed	
	Factors (PLFs)	Function of PLFs	Estimate 10-Years	Estimate 25-Years	Watershed Function		Estimate 25-Years
	Lower John	n Day Sumi	ner Steel	head			
Butte Creek	Passage / Entrainment	45	65	70	36.5	62.2	69
	Riparian / Floodplain	35	60	70			
	Water Quality - Temperature	30	65	70			
	Water Quantity – Flow	25	55	65			
Pine Creek	Riparian / Floodplain	85	90	95	68.5	76.2	86.8
	Watershed - Hydrology	55	65	80			
Pine Hollow	In-channel Characteristics	45	60	80	47	64	84
	Riparian / Floodplain	50	70	90		ll.	
Thirtymile Creek	Passage / Entrainment	35	75	90	40.5	64.5	77.8
	Pools	45	60	70		l	
	Riparian / Floodplain	45	70	80			
	Sediment	55	65	70			
	Water Quality - Temperature	45	55	75			
	Water Quantity – Flow	40	55	60			

		Estimated	Esti	mated	Estimated	Est. Future Fund	
Watershed	Primary Limiting	Current	Future F	unction	Current	for Watershed	
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years
	Middle Colur	nbia Tribu	taries Ste	eelhead			
Alder Creek	In-channel Characteristics	65	70	80	64.2	69.2	77
	Riparian / Floodplain	60	65	75	V		
	Sediment	60	65	70			
	Water Quality - Temperature	60	65	70			
	Watershed - Hydrology	70	75	80			
Glade Creek	Ecologic – Community	75	80	80	62	67	71
	In-channel Characteristics	70	75	80			<u> </u>
	Riparian / Floodplain	65	70	75	1		
	Sediment	60	65	70			
	Water Quality - Temperature	65	70	75			
	Water Quality - Toxics	65	70	70			
	Watershed - Hydrology	50	55	60			
Major Creek	In-channel Characteristics	40	50	70	52.5	61	75.2
	Pools	40	50	70			ļ
	Riparian / Floodplain	65	75	85			
	Sediment	65	70	80			
	Water Quality - Temperature	70	75	80			
	Watershed - Hydrology	70	75	80			
Pine Creek (Jupiter Cyn to Headwaters)	In-channel Characteristics	60	65	70	45.8	54	61.5
	Sediment	70	75	75			
	Water Quality - Temperature	80	85	85			
	Watershed - Hydrology	35	45	55			
Pine Creek (Mouth to Jupiter Cyn)	In-channel Characteristics	70	75	80	14	95.5	96.2
	Passage / Entrainment	5	100	100			
	Water Quality - Temperature	60	65	70			
	Watershed - Hydrology	65	70	75			
Wood Gulch	In-channel Characteristics	60	70	80	63.8	69.2	77.2
	Riparian / Floodplain	50	60	75			
	Sediment	60	65	70			
	Water Quality - Temperature	60	65	70			
	Watershed - Hydrology	75	75	80			

Watershed	Primary Limiting	Estimated Current	Estin Future F	mated unction	Estimated Current	Est. Futu for Wa	
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years
	Middle Fork J	ohn Day Su	ımmer Sı	teelhead			
Big Boulder Creek	In-channel Characteristics	40	80	90	38	76	88
Dig Boulder Creek	Pools	35	70	85	30	70	00
Big Creek	In-channel Characteristics	40	80	95	36	76	93
Dig citeti	Pools	30	70	90	20	70	70
Butte Creek	In-channel Characteristics	35	55	75	29.5	57.8	77.8
	Pools	25	60	80			
Camp Creek	In-channel Characteristics	50	70	85	13.8	65.8	77.5
-	Passage / Entrainment	0	70	75		1	JL
	Pools	20	45	85			
	Water Quality - Temperature	10	60	75			
	Water Quantity – Flow	25	45	65			
Dead Cow Gulch	Pools	15	85	90	17	87	92
	Riparian / Floodplain	20	90	95			
Granite Boulder Creek	Passage / Entrainment	30	65	85	28.2	66.8	86.8
	Pools	25	70	90			
Middle Fork John Day River	In-channel Characteristics	35	90	95	44.8	80	91
	Riparian / Floodplain	55	90	95			
	Water Quality – Chemistry	60	85	90			
	Water Quality - Temperature	45	75	90			
	Water Quantity – Flow	55	75	85			
Ragged Creek	In-channel Characteristics	35	60	85	32.5	61.2	85
	Pools	25	65	85			
Rubby Creek	In-channel Characteristics	30	65	85	28.5	62	86.5
	Pools	25	55	90			
Vincent Creek	In-channel Characteristics	55	75	90	47.5	72	90
	Pools	30	65	90			
Vinegar Creek	In-channel Characteristics	40	85	90	38.2	83.2	88.2
	Pools	35	80	85			

			Estimated		Estimated	Est. Future Func	
Watershed	Primary Limiting	Current	Future Function Co		Current	for Wa	tershed
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years

Naches River Summer Steelhead

Naches River	Ecologic – Community	90	92	95	70.1	76.2	85.3
	In-channel Characteristics	70	75	85		J.	Į.
	Passage / Entrainment	85	90	95			
	Pools	70	75	80			
	Riparian / Floodplain	60	65	75			
	Sediment	70	75	85			
	Side Channel Reconnection	70	75	80			
	Water Quality – Chemistry	95	95	95			
	Water Quality - Temperature	80	85	90			
	Water Quality - Toxics	98	98	98			
	Water Quantity – Flow	40	55	75			
	Watershed - Hydrology	70	77	92			

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function of PLFs	Future F Estimate		Estimated Current Watershed Function		tershed
	North Fork Jo	hn Day Su	mmer St	eelhead			
Lower N Fk. JD and tribs (mouth to M Fk.)	In-channel Characteristics	40	40	40	36.5	37.3	38.5
	Passage / Entrainment	30	30	30			
	Riparian / Floodplain	40	42	45			
	Sediment	40	42	45			
Mid N Fk. JD and tribs (M Fk. to and including Camas Cr.)	In-channel Characteristics	40	50	60	45	56.5	68
	Passage / Entrainment	50	70	90			
	Riparian / Floodplain	40	50	60			
	Sediment	50	60	70			
	Water Quality - Temperature	50	60	70			
Upper N Fk. JD and tribs above Camas Cr.	In-channel Characteristics	60	70	80	62	72	82
	Passage / Entrainment	70	80	90			
	Riparian / Floodplain	60	70	80			
	Sediment	60	70	80			
	Water Quality - Temperature	60	70	80			

		Estimated	Esti	mated	Estimated	Est. Future Funct.	
Watershed	Primary Limiting	Current	Future F	unction	Current	for Wa	tershed
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years
	Rock	creek Ste	elhead				
Luna Gulch	In-channel Characteristics	70	75	80	65.5	70.5	76
	Riparian / Floodplain	70	75	80			
	Sediment	60	65	75			
	Water Quality - Temperature	60	65	70			
	Water Quality - Toxics	65	70	75			
	Watershed - Hydrology	60	65	70			
Quartz Creek	In-channel Characteristics	40	55	70	40.5	51.2	70
	Riparian / Floodplain	40	50	70		1	JI.
	Sediment	70	80	85			
	Water Quality - Temperature	60	65	75			
	Watershed - Hydrology	30	40	65			
Rock Creek (Bickleton Road to Headwaters)	In-channel Characteristics	35	45	55	38	47.5	66.8
,	Riparian / Floodplain	40	50	70			
	Sediment	75	80	85			
	Water Quality - Temperature	60	65	75			
	Watershed - Hydrology	30	40	65			
Rock Creek (Mouth to Bickleton Road)	Ecologic – Community	60	65	70	35.8	45.5	59
210111)	In-channel Characteristics	25	40	60			
	Riparian / Floodplain	30	40	60			
	Water Quality – Chemistry	70	75	80			
	Water Quality - Temperature	50	55	55			
	Water Quantity – Flow	40	45	50			
Squaw Creek (including Harrison Creek)	In-channel Characteristics	70	75	80	65.5	70.5	76
	Riparian / Floodplain	70	75	80			
	Sediment	60	65	75			
	Water Quality - Temperature	60	65	70			
	Water Quality - Toxics	65	70	75			
	Watershed - Hydrology	60	65	70			

	I		Estimated		Estimated	d Est. Future Fu	
Watershed	Primary Limiting	Current	Future Function		Future Function Current		tershed
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years

Satus Creek Summer Steelhead

Satus Creek	Ecologic – Community	90	92	95	75	80	85.8
	In-channel Characteristics	85	90	95		1	JI.
	Passage / Entrainment	90	100	100			
	Pools	80	85	90			
	Riparian / Floodplain	65	70	80			
	Sediment	85	90	95			
	Side Channel Reconnection	80	85	90			
	Water Quality – Chemistry	85	92	95			
	Water Quality - Temperature	70	75	80			
	Water Quality - Toxics	98	98	99			
	Water Quantity - Flow	60	65	75			
	Watershed - Hydrology	60	63	70			

		Estimated	Esti	Estimated		Est. Futu	re Funct.				
Watershed	Primary Limiting	Current	Future Function		Future Function		Future Function		Current	for Wa	tershed
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate				
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years				

South Fork John Day Summer Steelhead

South Fork John Day River	In-channel Characteristics	70	85	87	53	78	80.4
	Riparian / Floodplain	45	90	95			.,
	Water Quality - Temperature	60	80	80			
	Water Quantity – Flow	45	45	45			

		Estimated			Estimated	Est. Futu	re Funct.
Watershed	Primary Limiting	Current			Future Function Current		tershed
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years

Toppenish Creek Summer Steelhead

Toppenish Creek	Ecologic – Community	90	92	95	63	71	77.8
	In-channel Characteristics	50	60	70			Ч
	Passage / Entrainment	65	75	75			
	Pools	70	75	80			
	Riparian / Floodplain	55	60	70			
	Sediment	50	55	65			
	Side Channel Reconnection	70	75	80			
	Water Quality – Chemistry	82	87	92			
	Water Quality - Temperature	65	75	85			
	Water Quality - Toxics	95	96	97			
	Water Quantity - Flow	40	60	70			
	Watershed - Hydrology	70	75	80			

Watershed	Primary Limiting	Estimated Current	Future F		Estimated Current	Est. Futur	tershed
	Factors (PLFs)	Function of PLFs	Estimate 10-Years	Estimate 25-Years	Watershed Function		Estimate 25-Years
	Umatilla R	River Summ	er Steell	iead			
Birch Creek	In-channel Characteristics	40	60	80	36	55.8	73
	Passage / Entrainment	50	75	90			
	Riparian / Floodplain	20	35	50			
	Sediment	40	55	70			
	Water Quality - Temperature	30	50	70			
Meacham Creek	In-channel Characteristics	40	60	80	37.5	55.5	74.5
	Riparian / Floodplain	30	50	70			
	Sediment	50	60	80			
	Water Quality - Temperature	40	55	70			
Umatilla above McKay Creek	In-channel Characteristics	50	60	70	43	53	63
	Riparian / Floodplain	40	50	60			
	Sediment	40	50	60			
	Water Quality - Temperature	40	50	60			
Umatilla below McKay Creek	In-channel Characteristics	50	60	70	43	53	63
	Riparian / Floodplain	40	50	60		1	<u>Į</u> L
	Sediment	40	50	60			
	Water Quality - Temperature	40	50	60			

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function of PLFs	Future E Estimate				tershed
	Upper Joh	n Day Sumi	ner Steel	head			
Canyon Creek	Passage / Entrainment	10	12	13	10	12	13
John Day River	In-channel Characteristics	5	25	30	33	53	66
	Passage / Entrainment	40	60	75		1	JI
Strawberry Creek	Passage / Entrainment	10	70	75	14.5	62.5	70.5
	Water Quantity – Flow	25	45	60		I	JL

			Estimated		timated Estimated		re Funct.
Watershed	Primary Limiting	Current	Future Function		Future Function Current		tershed
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years

Upper Yakima River Summer Steelhead

Upper Yakima River	Ecologic – Community	80	85	90	61.6	67.6	75.4
	In-channel Characteristics	60	65	70			JI.
	Passage / Entrainment	70	75	75			
	Pools	70	75	80			
	Riparian / Floodplain	40	45	55			
	Sediment	80	82	87			
	Side Channel Reconnection	70	75	80			
	Water Quality – Chemistry	90	92	95			
	Water Quality - Temperature	80	85	90			
	Water Quality - Toxics	95	96	97			
	Water Quantity – Flow	40	55	75			
	Watershed - Hydrology	40	45	55			

Watershed	Primary Limiting Factors (PLFs)	Estimated Current Function of PLFs	Future F Estimate	mated Sunction Estimate 25-Years	Current Watershed	Estimate	itershed
	Walla Walla	a River Sum	mer Stee	elhead			
Mill Creek	In-channel Characteristics	25	60	80	25	56	76
	Passage / Entrainment	25	60	80			
	Riparian / Floodplain	25	40	60			
Touchet Below Forks	In-channel Characteristics	25	30	40	30	38	48
	Passage / Entrainment	50	70	80			
	Riparian / Floodplain	25	30	40			
Touchet N & S Forks	In-channel Characteristics	25	30	50	32	38	56
	Passage / Entrainment	60	70	80		l .	-VI
	Riparian / Floodplain	25	30	50			
Walla Walla below Forks	In-channel Characteristics	25	35	50	28	40	54
	Passage / Entrainment	50	70	80		II.	Ų.
	Riparian / Floodplain	20	30	45			
Walla Walla N & S forks	In-channel Characteristics	50	55	60	56	61	66
	Passage / Entrainment	80	85	90		1	
	Riparian / Floodplain	50	55	60			

		Estimated	Estimated Future Function		Estimated	Est. Futu	re Funct.
Watershed	Primary Limiting	Current			Current	for Watershed	
	Factors (PLFs)	Function	Estimate	Estimate	Watershed	Estimate	Estimate
		of PLFs	10-Years	25-Years	Function	10-Years	25-Years